

visited by many of their fellow colonists, who, having cursorily examined them, fell to touching them with their antennæ on the abdomen, reminding me much of a mesmerist making passes over a victim. The effect was almost electrical. I was surprised to see the incapables at once begin to rally. After stretching their legs and moving their antennæ they moved along slowly for one or two steps and then went along as if nothing had happened. Others came and drank of the spirit not quite evaporated, but did not seem to suffer any bad effects. I buried a member of the community as it was in the act of carrying off a larva. Although many came and looked on none took compassion or attempted to relieve their friend. A small heap of larvæ, however, which I pressed down into the soft earth with my pencil, thereby injuring some of them badly, was disinterred, and every individual carried into a place of safety.

A stranger placed in the nest was very soon set upon, and before long its head was travelling on a direction opposite to that of its abdomen. The headsman's reward was a long draught of blood from the severed abdomen.

On my turning over the stone at first, the larvæ were exposed, but were soon begun to be carried off. Some of the workers were certainly busybodies, fussing about, pretending to do a great deal, while in fact they were shirking their fair share of the household duties. They would rush at the larvæ, seize one and be off with it in a great hurry, but they had not gone far (not even always in the direction of the entrance) before they changed their minds, threw down their load to return for another helpless infant, which was treated in the same way, being carried generally in a direction contrary to the previous, and dropped down anywhere, sometimes beyond the limits of the nest altogether.

My observations with regard to ants dropping intentionally or jumping from small heights do not quite agree with Sir John Lubbock's, but they are not yet full enough to give in detail. I hope to have fuller opportunities for the investigation of the habits of this most interesting class in the Malayan Archipelago, whither I am now bound.

Meantime I hope these few notes may have some interest for the readers of NATURE.

HENRY O. FORBES

S.S. *Celebes*, off Naples, October 18

Colour-blindness

HAS it been suggested that the traditional blindness of Homer may have been—in the absence among the ancients of a specific name for colour-blindness—*merely* the colour-blindness for which Dr. Pole makes out so good a case? To readers ignorant of Daltonism, blindness must have appeared the only explanation of a glaringly misapplied colour-epithet. It is at least clear that the author of the Homeric poems was not always blind in the modern sense of the word.

Brighton, November 1

CLEMENTINA BLACK

THE conclusion of Dr. Pole's valuable paper will doubtless stir up many to investigate the question whether or not dichromatism was the rule at an early stage of human vision.

Will you allow me to adduce, towards the solution of this question, the evidence of a literature, which though not nearly so ancient as the Greek, goes back further than that of many European nations. I mean the Irish. I find in some of the earliest works in that language an ambiguity in the application of adjectives of colour very similar to that noticed in the Homeric writings by Mr. Gladstone. *Glas*, for instance, is used, indifferently, apparently, for green, grey, and blue. *Uaithne* is used to indicate the colour of grass, and also that of the human eye. *Dearg* is employed to denote the colour of wine, and also that of clay. *Ruadh* (red) is similarly ambiguous.

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EDMUND MCCLURE

Carrier-Pigeons

IN NATURE (vol. xviii. p. 682) it is stated that carrier pigeons are being "turned to useful account" in a new direction in Germany, for Consul Ward writes to the Foreign Office "that the successful results attained by the establishment of communication between the two Eider lightships and the Port of Tønning, in

Schleswig, by these means has led to its organisation" elsewhere. This mode of communication is, however, not new, as carrier-pigeons were employed early in this century as a means of communication with the Bell Rock Lighthouse, as mentioned in my late father's "Account" of that work. The pigeons passed between the lighthouse and the shore—a distance of eleven miles in eleven minutes. The employment of these birds, however, was, I suppose, found to be more curious than convenient, for they have long since ceased to be employed. The pigeons were presented to the establishment by the late Sir Samuel Brown, R.N.

Edinburgh

THOMAS STEVENSON

Globular Lightning

As the curious phenomenon known by the above name seems to be attracting some attention just now, I venture to send you the following details, which, though of rather ancient date, are still, owing to their startling character, very fresh in my memory.

I think it was in the year 1866, in the beginning of the month of August, that I was walking in the garden when the atmosphere became exceedingly oppressive (there had previously been a very long drought), and thinking by the appearance of the sky, which looked lurid and threatening, that a storm was coming on, I made for the house. As I was going up our front steps some rain-drops fell, which were the largest I ever saw. I had just reached the dining-room and was standing near the window, which looks north, when I saw a large ball of fire, which appeared to me, looking at it as I did from a distance, to be the size of a globe such as is used in schools, descend towards the earth. In descending it struck the church, which is immediately opposite our house, and brought with it a number of slates and part of a stone cross, making a terrific noise. There was a flash of lightning soon after, followed by a moderately loud clap of thunder, but nothing more. As there were not at that time any houses near to ours I did not hear the occurrence mentioned by any one. The noise, though extremely loud, was not at all like thunder. The illumination of the rooms by the ball of fire was seen by two other persons in the house.

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CHARLOTTE HARE

Speaking-Trumpets

THE antiquity of the speaking-trumpet may be proved upon far higher authority than that of the imaginative Athanasius Kircher. It is literally as old as the Pyramids. While examining Lepsius's great work upon ancient Egypt for my "History of Music" I noted two examples among the plates of the fourth dynasty of Egypt (see Lepsius's "Denkmäler," Dyn. 4, Abt. 2, Blätter 27 and 30). The Egyptian speaking-trumpets seem to have been some five feet or more in length, and too wide in diameter to have been blown by the mouth. They are conical, and lack the contraction near the mouth-end which is so observable in their war-trumpets.

WM. CHAPPELL

Toughened Glass

MY own experience supports the necessity for caution in using Bastie's toughened glass. Shortly after its introduction I had some graduated measures, and although they were sufficiently tough to bear the shock consequent on falling five or six feet to the ground, yet after a time some short scratches appeared on their surface, and these rapidly spreading till they nearly covered the whole of the glass, when but a slight touch was sufficient to make the measure fly into fragments. One placed on a shelf subject to rather rapid change of temperature, without any handling or apparent cause, broke up suddenly into tiny pieces, behaving, indeed, as if it were a Rupert's bomb.

Northampton, October 29

G. C. DRUCE

POTTERY AT THE PARIS EXHIBITION

THE extensive collections of pottery at the Paris Exhibition brought together from so many countries, is of high interest from a technical, as well as from an

art point of view. All that is now being done in pottery manufacture, all that has lately been achieved in the way of progress, has been here illustrated. An examination, even a rapid one, shows at once how far in advance of other countries England and France are.

Leaving all strictly art questions out of consideration, it is instructive to notice how the technical processes of manufacture impose limits on an artist's scope, and how these scopes have been widened by recent discoveries. It is not intended in this short note to do more than allude to the more important of these, and before doing so it is worth while mentioning that for domestic purposes English earthenware is still unapproached.

The *pâte-sur-pâte* decoration, so largely used in England and in France, is a good illustration of how a process in itself confines the artist's power within certain limits.

The nature of the ornamentation consists in applying by the brush, and modelling with tools, raised decorations of "paste," which is often, for the sake of artistic effect, in high relief. The paste is of much the same composition as the body on which it is applied, and requires a similar temperature to convert it into China, *i.e.*, 1,800° C. The colours which can be used for staining this paste must therefore also be capable of being produced at this heat, and the result is an entirely new range of ceramic colours. It is fortunate for the success of this style of decoration that the colours obtained are harmonious, of a subdued tone. They are quite unlike any that can be produced at a lower heat. Apart from the artist's manipulation, which may vary much in delicacy, the general effect of the production is almost wholly the natural result of the process, and is therefore not due entirely to the artist.

Another and distinct application of raised decoration is very largely represented in the French court. It was first used at Bourg-la-Reine some ten years ago, and is now made in many other localities. It consists of painting in clay on earthenware with pallet and brush in various gradations of relief, somewhat like impasto. The heat for firing is comparatively moderate, and the range of colours that can be employed is very wide.

The difficulties of painting *under glaze* are by degrees being overcome, and one manufacturer has, for the first time, produced gilding *under glaze*. The coloured glazes shown are rich and brilliant, and are well worth the particular notice of those who have paid attention to their production.

The organisation of the Sèvres manufactory and the fact that it is under the direction of a chemist of repute lead to expectations of discovery resulting from the research here carried out. And as a fact discoveries of no small value have been made of late years. Besides such discoveries as of compounds yielding new colours, there are some which take rank as new processes.

For example, the late François Richard, an artist on the staff of the manufactory, found that a large proportion of the enamel colours can be made which will bear a temperature of 600° C.—a higher temperature than has been hitherto supposed possible. This higher temperature now employed fuses and softens the glaze; the colours painted on it blend with it so that, on cooling, there is produced that softness and brilliancy hitherto characteristic of *pâte-tendre* decoration. This process has been named the *demi-grand feu*. A great benefit arising from this discovery is that many vases damaged in firing, which would formerly have been abandoned, can now be preserved, as the accidents which so often happen in firing can be repaired. Defects in glaze and colour can be concealed, as, during an exposure to this *demi-grand feu*, they are at melting-point, and new glaze, when added, becomes so fused that no line of junction is visible. This process also gets over a difficulty that had

long been felt in decorating kaolin, or *pâte-dur*, china, with a pleasing result, as the colours were always crude and harsh, being *on* the glaze. When a soft effect was required recourse was had to the less durable and more costly *pâte-tendre* as a body on which to paint.

A new method for decorating porcelain where gold alone is employed has been invented by M. Réjoux. Formerly, when porcelain was decorated with gilding alone, the ornamentation was limited to the production of a pattern by the greater or less relief of the gold, and by its being burnished or left dead. Even the thinnest part of the gilding was opaque. No delicate effects could be produced, and the style was suited rather for an abundant display of barbaric wealth than for refinement of expression.

The new process enables the gilding to be put on so thinly and transparently that the most delicate effects of light and shade can be produced. It is, however, applicable only to vases of *gros bleu* colour, that is, to vases coloured with oxide of cobalt. Upon this ground the pattern is drawn with a pigment composed of oxide of aluminium. This is then subjected to a firing which fuses the oxides together, and a brown surface results. This surface is found to be more suitable than any other known for the reception of the gold paste, which can be laid on in a thin film, and then, further, by subsequent removal, can be made to give great transparency. This property of the brown surface is not destroyed by being tinted before the gilding, so that it is possible to tint it with different colours which shall show through. A further variation is very frequently obtained by changing the tone of the gold by mixing it with alloys. This admirable effect of transparency has not been produced by any other means, and the first piece made (with many subsequent) is exhibited.

Another of the processes invented at Sèvres is that of enamelling on *pâte-tendre* body. In this the colours are applied in powder in the same way as in enamelling on metal, and are fused at a very low temperature. They have more body and are more decided than are those produced by the older enamelling process. On some of the vases shown at the Exhibition the white ground seen is not that of the creamy *pâte-tendre* body, but the pearl white of the stanniferous enamel.

Other recent improvements which should find a place in a more technical and exhaustive notice have been illustrated at the Exhibition. It may be mentioned that other nations are striving to adapt some of the traditionally recognised styles and their method of manufacture.

We may, in conclusion, refer to a small but important exhibition of porcelain, *allant-au-feu*, useful for laboratory as well as for domestic use. It is a very good white, thin and hard, and will bear high temperatures if the changes are not too sudden.

SUN-SPOTS, ATMOSPHERIC PRESSURE, AND THE SUN'S HEAT

THE question whether the atmospheric pressure varies with the spotted surface of the sun was noticed by me in a paper on the Isobars within the British Isles. I could not, however, find any appearance of a decennial law in the yearly mean pressures: such a relation presented itself however in the varying directions of the isobars (*Proc. Roy. Soc.*, 1877, p. 599). The yearly mean pressures in our latitudes are subject to large irregular variations, and several decennial periods would be requisite before these could be neutralised in the decennial means. As the irregularities are much smaller within the tropics, I did not fail to examine the yearly means for India which were in my possession at the time; and I found their variations very small and apparently without any relation to the decennial period. Mr. F. Chambers's interesting letter to NATURE (vol. xviii. p. 567) has